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(71) Applicant(s)

**Freeline Communications Limited
(Incorporated in the United Kingdom)
The Wharf, No12, Bridge Street,
BIRMINGHAM, B1 2JS, United Kingdom**

(72) Inventor(s)

**James Neil Hofton
Robert Rudd**

(74) Agent and/or Address for Service

**Forrester Ketley & Co
Chamberlain House, Paradise Place,
BIRMINGHAM, B3 3HP, United Kingdom**

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(56) Documents Cited

GB 2256594 A US 5679077 A

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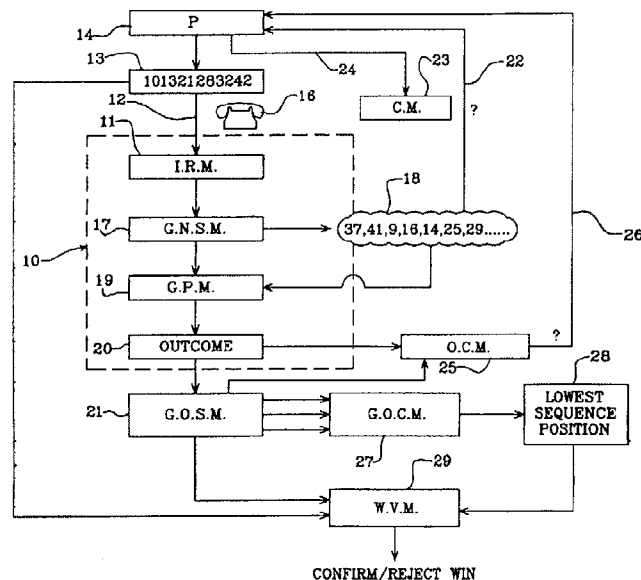
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INT CL⁷ A63F 3/06 3/08, G07C 15/00
Other: Online: EPODOC, WPI, PAJ**

(54) Abstract Title

Apparatus and method relating to bingo and like games

(57) An apparatus for playing bingo and like games, comprises a playing numbers information receiving module, a game number selection module operative to randomly generate, from a sequence of numbers, a game number sequence, and a game processing module, operative to compare said playing numbers with said random number sequence to identify the position in said random number sequence of the playing number needed to make the match, whereby the outcome of the game may be established. The apparatus may also comprise other modules to store said playing numbers and outcomes, to compare the outcomes of a plurality of games, to convey to the player the randomly generated number sequence at a rate that is controllable by the player and to convey to the player the outcome of the game. Another feature of the invention may be to arrange said playing numbers information receiving module to receive information from a communications device such as a telephone keypad of a computer. A method of providing a game of chance comprises the apparatus as herein described.

FIG 1



At least one drawing originally filed was informal and the print reproduced here is taken from a later filed formal copy.

This print takes account of replacement documents submitted after the date of filing to enable the application to comply with the formal requirements of the Patents Rules 1995

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FIG 1

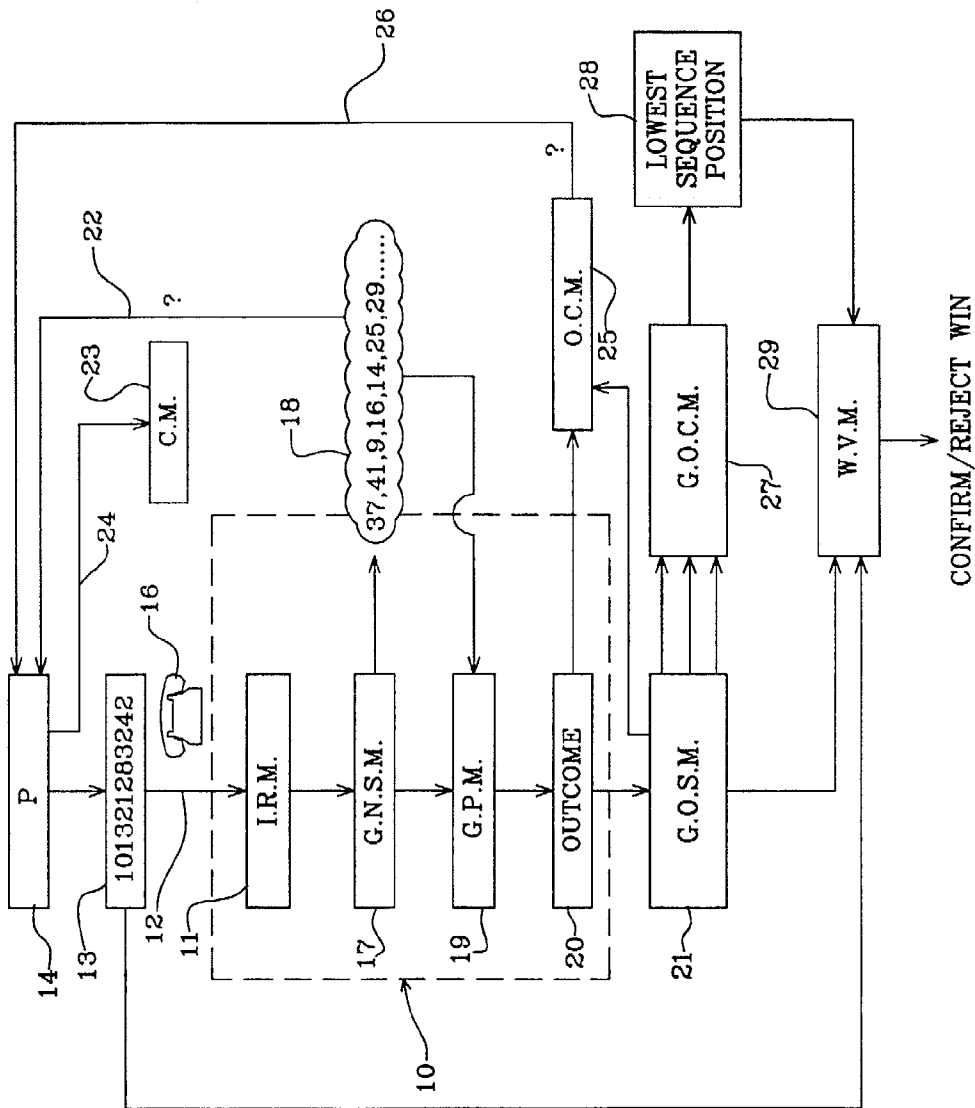
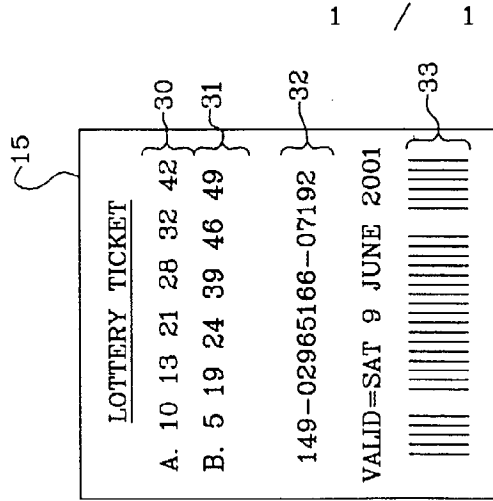


FIG 2



Title: Apparatus for Playing a Game and a Method of Providing a Game.

Description of Invention

This invention relates, in broad terms, to a game of the kind in which players are provided with a set of playing numbers, an object of the game being for a player to match the set with randomly selected game numbers that are conveyed, sequentially, to the player, with the match being made using as short a sequence as possible. Such games, referred to henceforth, for the sake of convenience, as games "of the kind specified", are known variously throughout the world as "bingo", "lotto", "kino", "tombola" and "housey-housey", and are often played simultaneously by a plurality of players, each player having his or her own playing numbers, with the randomly selected numbers being conveyed to each player.

Usually, such games are played at a communal location such as a hall, with the players thus assembling at a single location. However, proposals have also been put forward whereby "remote" playing is made possible, by establishing, for example, telephonic or video links between players and a games site, at which site the game numbers are selected at random.

However, such systems are complex to organise, and require each player to make contact with the game site prior to commencement of the game. In addition, such approaches limit severely the amount of games that can realistically be played, as each game can, under some circumstances, take a relatively long time to be completed.

It is an object of the present invention to provide improvements relating to games such as these, and, in particular, to provide apparatus for playing such games and to provide a method of providing such games, which alleviate these and other drawbacks.

According to a first aspect of the present invention, there is provided apparatus for playing a game of the kind specified, the apparatus comprising:

- a) a playing numbers information receiving module operative to receive information relating to the player's playing numbers,
- b) a game number selection module operative randomly to generate, from a plurality of game numbers, a game number sequence and
- c) a game processing module operative to compare the playing numbers with the randomly generated sequence to identify the position in the sequence of the playing number needed to make the match, whereby the outcome of the game may be established.

Preferably, a game outcome storage module is provided, operative to store, in relation to a particular game, the playing numbers information and the outcome of said game.

There may also be provided a game outcome comparator module operative to compare the outcome of a plurality of games, whereby the lowest said sequence position may be identified.

Preferably, a game outcome conveying module is provided, whereby the outcome of the game may be conveyed to a player.

The game outcome storage module may conveniently be operative to store a plurality of game outcomes. In hand with that, the game outcome conveying module, when provided with playing numbers information, may be operative to convey the outcomes of some or all of the games played using said playing numbers.

Preferably, a game number conveying module is provided, operative to convey, to a player, the randomly generated sequence.

The rate at which the sequence is conveyed to a player may be controllable by the player. Conveniently, conveyance of the sequence may be paused by the player. Desirably, re-commencement of the sequence conveyance may start with the last-conveyed game number. Control of the rate

may be obtained using appropriate DTMF signals. Thus, pressing “*” on a telephone keypad may result in the sequence being paused, the sequence re-commencing when “*” is pressed again.

The playing numbers information preferably is an encoded version of the playing numbers. Conveniently, the playing numbers information comprises an alphanumeric string.

The playing numbers information receiving module may be operative to receive the information from a communications device such as a telephone keypad or a computer. Preferably, the playing numbers information is passed to the receiving module using DTMF tones generated using a telephone keypad. However, the apparatus may be provided with suitably configured voice recognition capabilities, whereby a player may pass information to the apparatus using speech commands.

Thus, the playing numbers information may be recited or spoken by a player. Similarly, during conveyance of the sequence to a player, the player may say “Slower” to reduce the rate at which the sequence is conveyed, “Faster” to increase the rate or “Pause” to pause the sequence, for example. Such commands may be acknowledged by the apparatus by use of an interactive voice response module which is operative to repeat the thus-entered commands to the player. This will be advantageous for players not equipped with a touch-tone telephone.

As a further alternative, players may contact a support centre, where an operator, listening to the player’s instructions, enters the player’s chosen playing numbers into the apparatus, to allow the game to take place. Minicom (text-assisted telephony) connections are also envisaged for the hard-of-hearing.

The apparatus may further comprise a win validation module, operative to compare, using the game outcome storage module, the lowest sequence



position with the outcome or outcomes associated with a specified set of playing numbers.

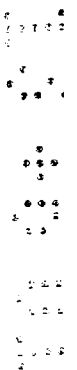
Some or all of the playing numbers information receiving module, game number selection module, game processing module, game outcome storage module, game outcome comparator module, game outcome conveying module and game number conveying module may be provided in, or as part of, a computer system.

Preferably, at least the playing numbers information receiving module comprises a transducer, operative to convert received DTMF tones into a form understandable by the computer system.

From the foregoing, it will be appreciated that the invention provides an automated apparatus for playing a game of the kind specified, that enables players to participate in such a game as and when they choose to do so, at almost any time of the day or night, throughout the year. In particular, the provision of a game number selection module which is operative randomly to generate, from a plurality of game numbers, a game number sequence, enables the player to play a succession of different games, using the same playing numbers, with the various outcomes of the games played being stored by the apparatus, but made available to the player should the player wish to check the outcomes of the games that have been played.

In accordance with a second aspect of the present invention, there is provided a method of providing a game of the kind specified, the method comprising:

- a) receiving, from a player, playing numbers information relating to the player's playing numbers,
- b) generating randomly, from a plurality of game numbers, a game number sequence, and



- c) comparing the playing numbers with the randomly generated sequence to identify the position in the sequence of the playing number needed to make the match, and thus establishing the outcome of the game.

The method may also comprise storing, in relation to a particular game, the playing numbers information and the outcome of said game.

Preferably, the method also includes comparing the outcomes of a plurality of games to identify the lowest said sequence position.

The method conveniently may also include conveying, to a player, the outcome of some or all of the games played using said player's playing numbers.

The playing numbers information may be sent, by a player, using a communications device such as a telephone keypad or a computer.

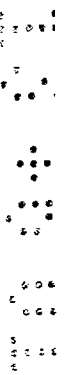
A plurality of separate games may be played, in succession, using the same playing numbers, the outcomes of said plurality of games being stored.

In accordance with a third aspect of the present invention, there is provided a method of providing a game of the kind specified to a plurality of players, comprising:

- a) receiving, from the players, playing numbers information relating to the players' playing numbers,
- b) generating randomly, from a plurality of game numbers, player-specific game number sequences, and
- c) comparing the players' playing numbers with the randomly generated player-specific sequences to identify the positions in the sequences of the playing numbers needed to make the matches, and thus establishing a plurality of player-specific outcomes of the games.

The player-specific sequences may be generated at different times.

The invention, in its third aspect, may also comprise storing, in relation to the games, the playing numbers information and the outcomes of the games.



The invention may also comprise comparing the outcomes of the games and identifying the lowest said sequence position.

Conveniently, the invention, in its third aspect, comprises conveying, to one of the plurality of players, the outcome of some or all of the games played using said player's playing numbers.

The playing numbers information may be sent, by the players, using communications devices such as telephone keypads or computers.

A plurality of separate games may be played, in succession, using the same playing numbers, the outcomes of said plurality of games being stored.

The invention will now be described in greater detail, but strictly by way of example only, by reference to the accompanying drawings, of which

Figure 1 is a schematic illustration of the various components and steps that the invention provides; and

Figure 2 is a schematic illustration of a set of playing numbers provided in a conventional-type lottery ticket.

Looking first at Figure 1, this shows, in somewhat schematic form, apparatus 10 for playing a game of the kind specified, the apparatus 10 comprising a playing numbers information receiving module 11 which receives, via a telephonic link 12, playing numbers information 13 supplied to the apparatus by a player 14. Access to the information receiving module conveniently is by way of a premium rate telephone line, the cost of the call being determined in accordance, for example, with the quantity of sets of playing numbers being used. The playing numbers information 13 may comprise a numeric string composed of numeric characters that correspond directly to a set of playing numbers featured on a playing card 15 (see Figure 2), or may be provided by an encoded version of the playing numbers. This encoded version, which may take the form of a multi-digit alphanumeric string, is conveniently generated from the playing numbers themselves using a suitable



algorithm, although the precise generation method used is not critical to the performance of the present invention.

Whatever form it takes, the playing numbers information preferably is conveyed to the information receiving module 11 using DTMF tones generated in a telephone 16, the information receiving module comprising a transducer (not shown) which converts the incoming sonic information to computer-readable information for the purpose described below.

Subsequently, a game number selection module 17 which, like the information receiving module 11, conveniently forms part of an integrated computer system, generates randomly, from a plurality of available game numbers, a game number sequence 18. It should be appreciated, at this point, that the length of the sequence is determined by the quantity of available game numbers, such that a game employing the numbers 1 to 49 would, by definition, result in the generation of a 49 element sequence, with the elements of the sequence being disposed in a random order. The length of the sequence could of course be adjusted by effecting appropriate configuration changes in the apparatus 10.

As this point, it is also important to realise that the apparatus 10 is aware not only of the player's playing numbers, but is also aware of the (in this case) 49-digit game number sequence generated by the game number selection module. Using this data, a game processing module 19 is able to compare the playing numbers with the randomly generated sequence 18, and is thus able to identify the position in the sequence 18 of the last playing number needed to effect a match between the set of playing numbers and the randomly generated sequence. Thus, using the sequence 18 shown in Figure 1, it will be appreciated that had the player used 37, 41, 9, 16, 14 and 25 as his or her playing numbers, the game processing module 19 would identify sequence position "6" as the position necessary to effect the match, whereas if the player's last chosen playing number had been 29, the game processing module



would identify position “7” as the sequence position required to effect the desired match.

From this, it will be understood that the likelihood of matching a six playing number set with the first six elements of the randomly generated sequence 18 is extremely small: about 14 million to one, where the sequence contains 49 elements. Of course, as the “match” position increases along the sequence 18, the likelihood of obtaining a match increases.

The outcome 20 (i.e. the “match” position), established by the game processing module, is then passed to a game outcome storage module 21 which then stores, in relation to that game, the playing numbers information 13 and the outcome 20. In this way, a record is maintained of the playing numbers used, the sequence 18 generated and the outcome 20 of the game.

During playing of the game, the player 14 may listen to the sequence 18 using a voice link 22, although it will be appreciated that it is not necessary for the player 14 to do this, as the outcome 20 is established almost immediately by the game processing module 19, which acts to process the game sequence information in conjunction with the playing numbers information. However listening to the sequence 18 via the telephonic connection 22 enables the player 14 to experience greater “playability” and provides the player with an option to cross-off his or her game numbers from a playing card as the sequence 18 is recited. A game may typically thus last for about 5 minutes. On this basis, when the player 14 has marked off a sufficient quantity of playing numbers (e.g. a line of six) the player 14 may press an appropriate button on his or her telephone keypad, for example, to dispatch a claim command 24 to indicate to the apparatus that a claim has been made. Alternatively, when a voice recognition module is provided, a player may say “Claim” to indicate this.

Upon receipt of this indication, the apparatus may make an announcement to the player such as “Thank you - you have claimed after 23 calls. Please ring our claim validation line to check your scores”. If it



transpires that the player claimed before the playing numbers could have been matched, an appropriate announcement may be made. To effect claim validation, a claim module 23 may be provided, responsive to a DTMF command 24, to request a game outcome conveying module 25 to convey the outcome 20 to the player 14. The game outcome conveying module 25 may, in addition to conveying the "actual" outcome to the player, may also convey to the player the sequence position corresponding to the point at which the claim command 24 was dispatched to the claim module 23. Thus, the outcome conveying module 25 may be provided with a voice synthesising module which announces to the player 14, via a telephonic connection 26, a message along the lines of "You have claimed after 23 calls. In fact your six numbers came up after just 21 calls, and your score of 21 has now been recorded. Thank you for playing".

A player 14, desirous of checking his or her scores, may effect a separate connection with the game outcome conveying module 25, the module 25, when provided with the player's playing numbers information, being operative to convey, using information obtained from the game outcome storage module 21, information to the player 14 concerning the score or scores obtained by the player 14 during the most recent game or games played by that player. Where the information received from the game outcome storage module 21 indicates that the player 14 has used his/her game numbers on a plurality of occasions during an allocated game playing period, the game outcome conveying module 25 preferably is operative to convey the player's scores in a chronological order. Up to 20 previous games, for example, may be reported in this way. Thus, where three games have been played, for example, the game outcome conveying module 25 may announce to the player, using the telephonic connection 26, a message along the lines of "In your first game, your game numbers came up after 14 calls. In your second game, your game numbers came up after 19 calls. In your third game, your game numbers came

up after 24 calls. Your game numbers have been used for three games, and there are therefore no more scores for you to check at this time. Thank you for calling”.

In order to establish a winner, during an allocated game playing period, the game outcome storage module 21 forwards each game outcome to a game outcome comparator module 27 which determines, on a periodic or continual basis, the lowest game outcome passed to it by the game outcome storage module 21. This, as will be appreciated, enables the lowest sequence position 28 to be identified, at the end of an allocated game playing period. Thus, for example, where the game playing period runs from a Saturday to the following Wednesday, with the game period ending at, say, 7pm on that Wednesday, the game outcome comparator module 27 will identify, shortly after the end of the game period, the lowest sequence position 28 needed by a player to match his or her playing numbers with a randomly generated sequence. This lowest sequence position is then announced, conveniently as part of a television or radio broadcast, so that the players may see whether any of their game outcomes match the lowest sequence position.

The lowest sequence position 28 is also passed to a win validation module 29 which is accessible by players to enable the players to claim game wins, and for their claims to be checked for authenticity. Thus, a player 14 may link-up with the win validation module 29 by (for example) calling a freefone or lo-call telephone number, with the player then being prompted, by a suitable announcement, to input his or her playing numbers information, conveniently by using the buttons provided on a telephone keypad. Using this playing numbers information, and using information obtained from the game outcome storage module 21, the win validation module 29 checks whether the playing numbers associated with the playing numbers information were indeed used to obtain a game outcome matching the lowest sequence position 28. Should this be confirmed, the player 14 is given detailed information on how to

claim the main game prize, but if the information contained within the game outcome storage module 21 indicates that the input playing numbers were not used to obtain a winning outcome, an appropriate message is conveyed to the calling player. Where more than one player validly claims a win, the prize may, of course, be divided between them.

In addition to providing a prize to those players that were successful in matching at least one outcome with the lowest sequence position 28, the applicants envisage that a lesser prize may also be provided to players who came close. Thus, where players were able to match their playing numbers with a randomly generated sequence using, say, one additional element of the sequence, such players may also be able to claim a prize, by contacting the win validation module 29 in the above described manner. In this way, the applicants envisage that a tier structure of prizes may be established, thus providing players of the game with a greater chance of winning a prize of some value.

Referring next to Figure 2, this shows at 15 a sample game card (in this example, a lottery ticket) of the type which could be used to play games to which this invention relates. In generally conventional manner, the ticket 15 shows two lines 30 and 31 of six playing numbers, which may have been selected by a player or selected at random, at the option of the player. The ticket 15 also shows a playing numbers information code 32, which in this case is a three-part numerical sequence, the elements of the sequence being generated using a dedicated algorithm from the chosen playing number sets 30 and 31. Thus, in other words, the information 32 incorporates the playing number sets 30 and 31, with a bar code 33 representing the code 32 in a different graphical (and machine-readable) form.

From this, it will be appreciated that, as an alternative to calling the win validation module 29, appropriately equipped booths may be provided whereby “winning” tickets may be scanned using a bar code reader, so that information

relating to the playing numbers may be elicited. The scanning apparatus is linked, in generally conventional fashion, to the game outcome storage module 21, so that a determination may be made as to whether the scanned ticket was indeed used to obtain a winning outcome, tallying with the lowest sequence position 28, substantially in the manner previously described.

Although, in the example shown in Figure 2, two lines of playing numbers are provided, it will be appreciated that this is purely optional, and unnecessary for playing the game. However, as with conventional games of the kind specified, using multiple lines increases a player's chances of matching one of the lines with a randomly generated sequence in as short a time as possible. Where input playing numbers information indicates that the ticket has multiple lines, the apparatus may prompt the player to choose whether to use all the lines, at a pro-rata cost, or whether only some of the lines should be utilised.

From the foregoing, it will be understood by those well versed in the relevant art that in addition to providing a novel, inventive and interesting game in its own right, the invention is particularly well suited to being used in conjunction with currently operated lotteries of which the United Kingdom's "The National Lottery" is a particularly good example. This is so because the game to which this invention relates can be played using lottery tickets already purchased by the playing public to play such lotteries, thus providing the game with an in-built lower age limit. Moreover, the present invention is used to provide players with an additional chance of winning with an already purchased ticket. The telephone number needed to play the game to which this invention relates conveniently may be printed on the reverse of the ticket.

Thus, should a player be unsuccessful in the main lottery (as the majority are), that player may then make use of the present invention, in effect by using the lottery ticket as a bingo card, in the manner described above. Of course, a successful player could also use the ticket in this way, should he or

she choose to do so. In the event of a "bingo" win, the existing lottery terminal infrastructure may be used to validate such wins, using the bar code readers that are already utilised to validate lottery wins, in conventional manner. In addition, existing lotteries of this type are provided with sophisticated code generation and storage capabilities, which could be used to identify, from input playing numbers information, the actual sets of playing numbers to which it relates. As will be appreciated, therefore, use of the present invention, in conjunction with existing lotteries is advantageous not only to the players, but also to the providers of such existing lotteries, as it promotes the sale of lottery tickets (and/or lines per ticket) and encourages retention of "unsuccessful" tickets, which is likely to influence players to purchase new tickets for a subsequent lottery draw.

In addition, results from the game to which this invention relates may be announced using existing lottery result channels. Thus, on a Saturday evening, for example, it may be announced, after a principal lottery draw, that "This week, the telephone bingo was won after 32 calls. Please call our claim validation line, or visit a lottery terminal, to check whether you are a winner".

Finally, it should be appreciated, for the avoidance of any doubt, that use of the word "numbers" in this specification is intended to encompass, in addition, alphanumeric characters, symbols, icons, tokens and the like, as the game to which this invention relates need not necessarily be played using "numbers" per se.

In the present specification "comprises" means "includes or consists of" and "comprising" means "including or consisting of".

The features disclosed in the foregoing description, or the following claims, or the accompanying drawings, expressed in their specific forms or in terms of a means for performing the disclosed function, or a method or process for attaining the disclosed result, as appropriate, may, separately, or in any combination of such features, be utilised for realising the invention in diverse forms thereof.

CLAIMS:

1. Apparatus for playing a game of the kind specified, the apparatus comprising:
 - a) a playing numbers information receiving module operative to receive information relating to the player's playing numbers,
 - b) a game number selection module operative randomly to generate, from a plurality of game numbers, a game number sequence and
 - c) a game processing module operative to compare the playing numbers with the randomly generated sequence to identify the position in the sequence of the playing number needed to make the match, whereby the outcome of the game may be established.
2. Apparatus according to Claim 1 further comprising a game outcome storage module operative to store, in relation to a particular game, the playing numbers information and the outcome of said game.
3. Apparatus according to Claim 1 or Claim 2 further comprising a game outcome comparator module operative to compare the outcomes of a plurality of games, whereby the lowest said sequence position may be identified.
4. Apparatus according to Claim 1, Claim 2 or Claim 3 further comprising a game outcome conveying module whereby the outcome of the game may be conveyed to a player.
5. Apparatus according to Claim 2, Claim 3 or Claim 4 wherein the game outcome storage module is operative to store a plurality of game outcomes.



6. Apparatus according to Claim 5 wherein the game outcome conveying module, when provided with playing numbers information, is operative to convey the outcomes of some or all of the games played using said playing numbers.
7. Apparatus according to any one of the preceding claims further comprising a game number conveying module operative to convey, to a player, the randomly generated sequence.
8. Apparatus according to Claim 7 wherein the rate at which the sequence is conveyed is controllable by the player.
9. Apparatus according to Claim 7 or Claim 8 wherein conveyance of the sequence may be paused by the player.
10. Apparatus according to Claim 9 wherein re-commencement of the sequence conveyance starts with the last-conveyed game number.
11. Apparatus according to any one of the preceding claims wherein the playing numbers information is an encoded version of the playing numbers.
12. Apparatus according to any one of the preceding claims wherein the playing numbers information is an alphanumeric string.
13. Apparatus according to any one of the preceding claims wherein the playing numbers information receiving module is operative to receive the information from a communications device such as a telephone keypad or a computer.

14. Apparatus according to any one of the preceding claims wherein the playing numbers information is passed to the receiving module using DTMF tones generated using a telephone keypad.

15. Apparatus according to any one of Claims 3 to 14 further comprising a win validation module, operative to compare, using the game outcome storage module, the lowest sequence position with the outcome or outcomes associated with a specified set of playing numbers.

16. Apparatus for playing a game substantially as hereinbefore described and/or as shown in the accompanying drawings.

17. A method of providing a game of the kind specified, the method comprising:

- a) receiving, from a player, playing numbers information relating to the player's playing numbers,
- b) generating randomly, from a plurality of game numbers, a game number sequence, and
- c) comparing the playing numbers with the randomly generated sequence to identify the position in the sequence of the playing number needed to make the match, and thus establishing the outcome of the game.

18. A method according to Claim 17 further comprising storing, in relation to a particular game, the playing numbers information and the outcome of said game.

19. A method according to Claim 17 or Claim 18 further comprising comparing the outcomes of a plurality of games to identify the lowest said sequence position.

20. A method according to Claim 17, Claim 18 or Claim 19 further comprising conveying, to a player, the outcome of some or all of the games played using said player's playing numbers.

21. A method according to any one of Claims 17 to 20 wherein the playing numbers information is sent, by a player, using a communications device such as a telephone keypad or a computer.

22. A method according to any one of Claims 17 to 21 wherein a plurality of separate games may be played, in succession, using the same playing numbers, the outcomes of said plurality of games being stored.

23. A method of providing a game of the kind specified to a plurality of players, comprising:

- a) receiving, from the players, playing numbers information relating to the players' playing numbers,
- b) generating randomly, from a plurality of game numbers, player-specific game number sequences, and
- c) comparing the players' playing numbers with the randomly generated player-specific sequences to identify the positions in the sequences of the playing numbers needed to make the matches, and thus establishing a plurality of player-specific outcomes of the games.

24. A method according to Claim 23 wherein the player-specific sequences are generated at different times.

25. A method according to Claim 23 or Claim 24 further comprising storing, in relation to the plurality of games, the playing numbers information and the outcomes of said games.

26. A method according to Claim 23, Claim 24 or Claim 25 further comprising comparing the outcomes of the games to identify the lowest said sequence position.

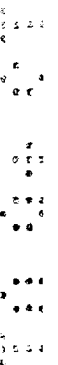
27. A method according to any one of Claims 23 to 26 further comprising conveying, to one of the plurality of players, the outcome of some or all of the games played using said player's playing numbers.

28. A method according to any one of Claims 23 to 27 wherein the playing numbers information is sent, by the players, using a communications device such as telephone keypad or a computer.

29. A method according to any one of Claims 23 to 28 wherein a plurality of separate games may be played, in succession, using the same playing numbers, the outcomes of said plurality of games being scored.

30. A method of providing a game of the kind specified substantially as hereinbefore described and/or as shown in the accompanying drawings.

31. Any novel feature or novel combination of features described herein and/or in the accompanying drawings.





Application No: GB 0114241.3
Claims searched: 1-30

Examiner: David McWhirter
Date of search: 12 December 2001

Patents Act 1977 Search Report under Section 17

Databases searched:

UK Patent Office collections, including GB, EP, WO & US patent specifications, in:

UK Cl (Ed.S): A6H (HJK)

Int Cl (Ed.7): A63F 3/06, 3/08, G07C 15/00

Other: Online: EPODOC, WPI, PAJ

Documents considered to be relevant:

Category	Identity of document and relevant passage	Relevant to claims
Y	GB 2256594 (PETER GALLOWAY) see page 3 paragraph 3 et seq.	11
X, Y	US 5679077 (PEACOCK ET AL.) see whole document, especially claim 1	X: 1-7, 13-15, 17-21 & 23-28 Y: 11

X	Document indicating lack of novelty or inventive step	A	Document indicating technological background and/or state of the art.
Y	Document indicating lack of inventive step if combined with one or more other documents of same category.	P	Document published on or after the declared priority date but before the filing date of this invention.
&	Member of the same patent family	E	Patent document published on or after, but with priority date earlier than, the filing date of this application.